

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A scanning method for operating a scanning apparatus for optical density measurement and/or color or spectral measurement of at least one measurement object arranged on a printing medium, the scanning apparatus connected to control electronics and an angle measurement transmitter, the at least one measurement object comprising measurement strips and the printing medium comprising a printing or paper web carried on a printing roll, the method comprising the steps of:

detecting, during a printing process, a position of a reference object on the printing medium, the reference object being arranged ahead of the at least one measurement object relative to a travel direction of the printing medium;

detecting, using the angle measurement transmitter, an angle of rotation of the printing roll;

triggering, using the control electronics, activation of said scanning apparatus with a predicted time-delay signal in response to detection of the reference object in said step of detecting a position of a reference object, the time delay for said time-delay signal being functionally dependent on a predetermined distance between the reference object and the measurement object;

illuminating, in response to said step of triggering, the measurement object with a measurement light pulse from a flash exposure unit during a predetermined time period in a defined manner; and

scanning, in response to said step of triggering, the at least one measurement object with at least one sensor during the predetermined time period, said at least one sensor detecting information from the at least one measurement object indicating at least one of optical density and color or spectral values of the at least one measurement object.

2. (canceled)

3. (previously presented) The scanning method according to claim 1, wherein the printing medium is carried on a roll, said method further comprising the step of measuring and storing, at an instant of detection of the reference object, a corresponding angle ϕ of rotation of the roll.

4. (previously presented) The scanning method according to claim 3, further comprising the step of calculating an angle-of-rotation increment based on a diameter of the roll, the measured angle ϕ of rotation and a predetermined distance running in a printing medium transport direction between the reference object and the measurement object, said step of scanning being performed when the roll has rotated the angle increment.

5. (previously presented) The scanning method according to claim 1, wherein said step of scanning is activated with a time delay relative to an instant of detection of the reference object, said step of scanning being triggered in accordance with a currently determined printing medium speed and a predetermined distance running in a printing medium transport direction between the reference object and the measurement object.

6. (currently amended) A scanning apparatus for optical density measurement and/or color or spectral measurement of at least one measurement object arranged on a printing medium carried on a printing roll, said at least one measurement object being a longitudinal measurement strip disposed along a coordinate direction approximately transversely of a printing medium transport direction, said printing medium having a reference object arranged thereon at a predetermined distance running in the printing medium transport direction ahead of said at least one measurement object, the scanning apparatus comprising:

an angle measurement transmitter on the printing roll for detecting an angle of rotation of said printing roll, said transmitter being electrically operatively connected to said apparatus;

a control electronics unit triggering activation of said scanning apparatus with a predicted time-delay signal, the time delay for said time-delay signal being functionally dependent on a predetermined distance between the reference object and the measurement object;

a flash exposure unit for illuminating the measurement object with a measurement light pulse during a predetermined time period of a printing process in a defined manner; and

a sensor device including a plurality of measurement heads arranged in a printing machine, ~~said printing medium having a reference object arranged thereon at a predetermined distance running in a printing medium transport direction ahead of said at least one measurement object, wherein said at least one measurement object is a longitudinal measurement strip disposed along a coordinate direction approximately transversely of the printing medium transport direction,~~ at least one of said measurement heads being operative to detect said reference object during the a-printing process, remainder ones of said measurement heads being activatable in response to said control electronics to detect and scan said at least one measurement object during the printing process the predetermined time period, said remainder ones of measurement heads being activated by said control electronics responsive to said reference object detection and being arranged and dimensioned for detecting information from the at least one measurement object indicating at least one of optical density and color or spectral values of said at least one measurement object.

7. (canceled)

8. (previously presented) The scanning apparatus according to claim 6, wherein said measurement strip includes a linearly arranged chain of measurement fields thereon, said measurement fields having specific color density values.

9. (previously presented) The scanning apparatus according to claim 8, wherein for detection and scanning purpose, each measurement head of said plurality of measurement heads is associated with at least one measurement section, said at least one measurement section includes at least one of said measurement fields.

10. (previously presented) The scanning apparatus according to claim 9, wherein each said at least one measurement section comprises two adjacent spaced apart measurement zones intervened by a narrow track.

11. (previously presented) The scanning apparatus according to claim 10, wherein the measurement zones each have identically recurring sequences of color density values.

12. (previously presented) The scanning apparatus according to claim 10, wherein each of said measurement zones has measurement fields of a same longitudinal dimension.

13. (previously presented) The scanning apparatus according to claim 11, wherein each of said measurement zones has measurement fields of a same longitudinal dimension.

14. (previously presented) The scanning apparatus according to claim 13, wherein each of said measurement zones includes a common number of measurement fields.

15. (previously presented) The scanning apparatus according to claim 10, wherein each of said measurement zones has at least one minimum and one maximum color density value.

16. (previously presented) The scanning apparatus according to claim 10, wherein said reference object comprises at least one of said measurement fields.

17. (previously presented) The scanning apparatus according to claim 6, wherein said measurement heads are arranged one after another along said coordinate direction, the measurement heads being moveable along said coordinate direction.

18. (previously presented) The scanning apparatus according to claim 17, wherein said apparatus is disposed above a printing machine roll, said printing medium being carried on said roll.

19. (original) The scanning apparatus according to claim 17, further comprising a slide device, said measurement heads being carried on said slide device, said slide device being moveable translationally along said coordinate direction.

20. (original) The scanning apparatus according to claim 18, further comprising a slide device, said measurement heads being carried on said slide device, said slide device being moveable translationally along said coordinate direction.

21. (original) The scanning apparatus according to claim 19, wherein in progressive time with slide device translational movement, each measurement head scans a measurement section on said measurement strip associated with said each measurement head.

22. (canceled)

23. (previously presented) The scanning apparatus according to claim 22, said control electronics unit being operative to trigger activation of apparatus scanning when a predicted angle-of-rotation increment relative to said angle of rotation at said detection is reached, the predicted angle-of-rotation corresponding to the predetermined distance.

24.-28. (canceled)

29. (previously presented) The scanning method of claim 1, wherein the step of triggering comprises measuring the passage of said distance using the angle measurement transmitter.

30. (previously presented) The scanning method of claim 1, wherein said step of scanning includes moving the at least one sensor in a translational movement transverse to a travel direction of the printing medium to scan the at least one measurement object, the movement of the at least one sensor means being activated responsive to a detection of the reference object.